

We are not surprised to note that the Scottish face is somewhat longer and narrower, but we were not quite prepared to find that the Londoner had the larger head. Nor need we really be surprised to find so close a similarity between samples of the population culled from the Clyde and from the Thames estuaries when we remember that since the close of the Bronze period British invaders and immigrants have invariably been members of the Nordic stock. We do not know when that stock first settled in Britain, but it is difficult to account for all the facts now at our disposal unless we accept Huxley's hypothesis that it reached Britain very early—probably, as Prof. Bryce supposes, at an early Neolithic or even more ancient date.

A. KEITH.

THE BEGINNINGS OF PORCELAIN IN CHINA.

IN a charming series of essays on "Fallen Idols," the late Mr. M. L. Solon, of Stoke-on-Trent—one of our most learned students of the history of ceramics—discussed some types of antique pottery which he ranked among the "transient glories of the world," because at one period these vessels, made from common clay, were the idols of the hour, and exceeded in value vessels made from the most precious materials. The idols were but fleeting fashions which have now lapsed into obscure tradition. It is the work of the archaeological ceramist to inquire into the nature and character of the pottery of ancient days. In many cases the greater the obscurity and the fewer the number of available facts, the more persistent have been the attempts to illumine dark and hazy tradition by extravagant conjectures. By a curious aberration of the human mind, the absence of positive evidence is very prone to engender assurance and confidence; this condition has ever been an *ignis fatuus*, luring the unwary into quagmires of fancy. What whimsical and grotesque views have grown about the murrhine vases, the *ollae fossiles*, and the buccaro vases! What curious myths have been current with respect to the origin of Chinese porcelain!

It is a pleasure to read Laufer and Nichols's brochure¹ on the beginnings of porcelain in China because here positive evidence occupies an all-important place. The essay should be read in conjunction with Laufer's "Chinese Pottery of the Han Dynasty." The materials for the latter work were collected by Laufer while on a mission in China about 1903 under the auspices of the American Museum of Natural History, and this work was supplemented by a later investigation in China about 1910.

The composition of the Han pottery, as represented by chemical analyses, is a close approximation to that of the better-class Chinese pottery, and the inferior quality of the body of the former

appears to be due to the primitive methods of manufacture prevalent in China during that epoch. The porosity, for example, is much greater than that of ware which is usually styled porcelain; indeed, the authors go so far as to call the body a "porcelain froth." This term, of course, is merely a metaphor and is no doubt intended to emphasise the low porosity of the ware. According to Nichols, the *outside* of one vessel he examined was coated with a white slip, and on this was superposed a red glaze. The *inside* of the vessel was coated with a glaze which appears to have been made by mixing the body material with limestone—in the approximate proportion of one of limestone to two of body. Analyses of the green glaze of another specimen correspond with a glaze of the Rockingham type, but without "alumina," and the colour is due to the presence of about 3 per cent. of copper oxide. The crude character of the body is taken to mean that the Han pottery is the "forerunner of true porcelain," and that

it represents one of the initial or primitive stages of development through which porcelain must have passed before it could reach that stage of perfection for which the Chinese product gained fame throughout the world.

Although many students of pottery consider that true Chinese porcelain first appeared in the Ming dynasty about the fourteenth century, and others carry it back to the Sung dynasty about the tenth century, there are several references to porcelain at an earlier period still—e.g. the seventh century—but the controversy on the origin of Chinese porcelain now turns on the meaning which the Chinese assigned to the term *ts'e*, and on the definition of porcelain. If the Han pottery is a porcelain, we can accept Laufer and Nichols's conclusion, and the beginning of porcelain would be carried to near the beginning of the Christian era; but did the term *ts'e* refer to ordinary pottery or to porcelain? There is no mistaking Laufer's view:—

By arguing that in the beginning the term *ts'e* denoted nothing but ordinary pottery we close our eyes to the real issue and act like the ostrich; in this manner we utterly fail to comprehend the process of evolution of porcelain.

He claims that the term *ts'e* refers to a porcelain-like pottery and should be translated by "porcelaneous ware" or some equivalent term, and that the early *ts'e* is represented by the Han pottery. This is scarcely the place to argue this matter, because so much depends on the meanings of the terms employed. The present writer, who knows nothing of the Chinese language, has always taken the early *ts'e* to have been a general term which covered *both* ordinary pottery and porcelain. Laufer's general conclusion that the Han pottery was the immediate precursor of porcelain will no doubt be generally accepted, because the experience gained with this pottery would naturally point the way to the manufacture of higher types of ware. I have shown several experienced men some fragments of the Han pottery which

¹ "The Beginnings of Porcelain in China." Publication 192 of the Field Museum of Natural History, Anthropological Series, Chicago, vol. xvi., No. 2, 1917.

Mr. Laufer has very kindly sent to me, but none considers that the ware itself can be called porcelain.

Laufer also has a section entitled "Historical Notes on Kaolin," and he shows that no real conclusion as to the origin of Chinese porcelain can be drawn from a consideration of the history of kaolin. It might be added that similar remarks apply to the manufacture of porcelain in Europe, for, contrary to the general belief, it can be proved that the required white-burning clay was a well-known article of commerce in Europe long before the method of making porcelain was developed by Böttger early in the eighteenth century. The Chinese appear to have adopted glazing near the beginning of the Christian era, and Laufer accepts Hobson's conclusion that the idea of glazing pottery was derived directly from the West, by contact with the Hellenistic world, in comparatively late historical times. Although a knowledge of glazing was necessary before the Chinese could manufacture porcelain ware, yet in this achievement "the creative genius of the Chinese was not guided by outside influences, but relied on its own powerful resources."

J. W. MELLOR.

NOTES.

AN exhibition of medical war specimens will be opened in the museum of the Royal College of Surgeons of England, Lincoln's Inn Fields, by Sir Alfred Keogh, G.C.B., Director-General of the Army Medical Service, on Thursday, October 11, at 3 p.m. The greater part of the exhibition is devoted to specimens collected by officers of the R.A.M.C. during the present war, but there are also representations of the wounds and injuries of former wars, borrowed from the museums of the College of Surgeons, of the Army Medical College, Millbank, of St. Thomas's Hospital, and of University College Hospital. The specimens have been prepared and arranged by the members of the museum staff of the college. At the same time, the honorary fellowship of the college is to be presented to Sir Alfred Keogh.

A NATIONAL institute is to be established in Italy having for its objects the investigation of the relations between malaria and agriculture, the study of the direct and indirect causes of the unhealthiness of malarial districts, and the organisation of a campaign against those causes.

WE note from *Engineering* for September 28 that the operation of lifting into place the central span of the new Quebec Bridge was completed successfully on Thursday last, September 27. The work was commenced on Tuesday, and extended over three days. The weight of the span is about 5000 tons, and the height of lift 150 ft.

THE council of the Chemical Society announces that three lectures are to be given at the ordinary scientific meetings during the forthcoming session as follows:—December 6, "The Relation between Chemical Constitution and Physiological Action," Dr. F. L. Pyman; February 21, 1918, "Recent Studies on Active Nitrogen," Prof. the Hon. R. J. Strutt; April 18, the Hugo Müller lecture, entitled "The Old and the New Mineralogy," Sir Henry A. Miers. It is also hoped to announce at a later date that Dr. Horace T. Brown

will deliver the lecture entitled "The Principles of Diffusion: their Analogies and Applications," which was unavoidably postponed last session. Arrangements have also been made for informal meetings to be held on November 15, March 21, and May 16.

WE learn from the *Secretary*, the journal of the Chartered Institute of Secretaries, that a *questionnaire* was recently circulated among members of the institute in order to obtain opinions as to the desirability of adopting a decimal system in place of the present British coinage, and the substitution of the metric system for the existing United Kingdom weights and measures. Of those who replied, 85 per cent. favoured a change to a decimal system of coinage as likely to be beneficial to the business in which they were engaged; and of the replies which expressed a preference, 66 per cent. favoured a £ basis of coinage rather than an "Imperial crown" or dollar basis. To an inquiry as to whether overseas business was hindered by the use of the present British coinage 50 per cent. of the replies indicated that this business was not so hindered; while in 64 per cent. of the replies a decimal system has been found of service for internal purposes in the business. In the case of weights and measures, 86 per cent. of the replies favoured a change to the metric system, and 53 per cent. of these had already adopted the change. Improved and extended business relations with traders in other countries were reported in 75 per cent. of the replies favouring the change. In 61 per cent. the business is stated to be hindered by the use of British weights and measures.

THE jubilee of the Albert Institute of Literature, Science, and Art, Dundee, was commemorated on September 20. It took its origin from the desire to perpetuate the memory of the Prince Consort by erecting a building devoted to the furtherance of the subjects which had occupied so much of his attention. The movement began in 1863, and the Town Council, when giving ground for the building, stipulated that accommodation should be provided within the structure for a free public library, in the event of Dundee adopting the Library Act. The Albert Institute was designed by Sir G. Gilbert Scott, and was opened in September, 1867, when the British Association occupied the Albert Hall in the building, and the public library was begun. An additional building was erected in 1872 as a museum and picture gallery, and ultimately the whole structure was handed over to the community. The story of this institute is one of continual progress. Large additions were made to the museum in 1887, and a separate technological museum was established in 1900. The libraries now consist of central lending and reference libraries, six branch libraries, partly paid for during the past ten years by Mr. Andrew Carnegie, two museums, two sculpture galleries, and six picture galleries. The donations to these departments in buildings, books, specimens, and pictures amount to more than 160,000l., given by citizens and by Mr. Carnegie. At present the libraries contain 170,000 volumes, and the annual issue is about 420,000 volumes. The museums have departments for natural history, ethnography, geology, and technology. The picture galleries contain representative works by eminent modern artists. At the commemoration addresses were delivered by Principal Sir John Herkless, Dr. Hew Morrison, Bailie Martin, Dr. John Ross, Mr. R. F. Martin, and others.

MR. RUFUS D. PULLAR, head of the well-known firm of Messrs. J. Pullar and Sons, Perth, whose death in Edinburgh on September 22 we recorded last week, was born in Perth in 1861, and was the elder son of Sir Robert Pullar. The firm was founded in 1820, and